IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Broderick *et al.*	**Conf. No.:**	4352
Serial No.:	10/042,625	**Art Unit:**	3623
Filing Date:	01/09/2002 K.	**Examiner:**	Deshpande, Kalyan
Title:	A PROJECT MANAGEMENT METHOD FOR OPTIMIZING INFORMATION TECHNOLOGY RESOURCES	**Docket No.:**	FR920000074US1 (IBME-0252)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. 1.131

We, the Applicants in the above-identified patent application, declare as follows:

1. That we are the inventors of the subject matter described and claimed in the above-identified patent application.

2. That prior to April 17, 2001, we conceived of a project management method for optimizing Information Technology (IT) sites including skilled people groups and computer equipment to achieve a cost savings, said method comprising the steps of: defining a project business need, the project business need being discrete and having a fixed duration; defining a project technical need, the project technical need involving resources needed to realize the project business need; determining, according to the project business need, a number of IT sites spread over a geographic area; determining, according to the project technical need, the skilled

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people groups and computer equipment required inside the geographic area; grouping and distributing, according to technical constraints, said skilled people groups and computer equipment over said IT sites inside the geographic area; and, physically consolidating the IT sites of the geographic area to form a unique project geographic area for realizing the project business need by considering project cost parameters, distribution of skilled people groups and geographic site location peculiarities, which include cultural differences, language differences and legal constraints.

3. That the present invention is described in Exhibit "A" dated November 24, 2000, referencing the article dated February 14, 2000.

4. That, subsequent to the conception of the invention, and up until the patent application filing date of November 1, 2001, we diligently and actively assisted the IBM Corporation Patent Department in the planning, preparation, review, and filing of the above-identified patent application.

Declarants further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

Date: _____

Francis Ambrose Broderick
Francis Ambrose Broderick

Date: _____

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William Escott Fellows

Date: _____

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Carol Lynn McHattie

Date: _____

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Raymond Luis Ramirez

Declarants further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

Date: _____
Francis Ambrose Broderick

Date: *March 2, 2008*   _____
William Escott Fellows

Date: _____
Carol Lynn McHattie

Date: _____
Raymond Luis Ramirez

Declarants further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

Date: _____   _____
                                        Francis Ambrose Broderick

Date: _____   _____
                                        William Escott Fellows

Date: 2/29/08   _____
                                        Carol Lynn McHattie

Date: _____   _____
                                        Raymond Luis Ramirez

Declarants further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

Date: _____
Francis Ambrose Broderick

Date: _____
William Escott Fellows

Date: _____
Carol Lynn McHattie

Date: 3/2/2008 _____
Raymond Luis Ramirez

EXHIBIT A

Title of disclosure (in English)
Geoplexing: A management methodology for IT optimisation

Main Idea

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.
The disclosure defines a methodology for the integration of IT functions (both physically and logically) ranging in size from complete country infrastructures down to individual client sites. The advantage to using this methodology is that it has been tried, tested and refined three times within IBM and there is a high degree of confidence that it is the quickest and most cost effective method for performing this kind of task.

2. How does the invention solve the problem or achieve an advantage,(a description of "the invention", including figures inline as appropriate)?
The methodology breaks the entire optimisation process into twenty one steps with an idea of the savings theoretically available at each step from each type of skill group or environment. The document also includes a collection of "lessons learned" during IBMs previous experience as well as tracking suggestions. Minor modifications may be necessary to cater for unique local issues. The 21 steps are divided into four stages: Pre-announcement planning, Organisational integration, Standardisation and Physical consolidation.

Details in this wordpro attachment ...   Geoplex ICM.lwp

3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?
Any key player in the outsourcing market (EDS, CSC, Debis, Cap Gemini, Sema Group et al) must have developed a similar methodology. The IBM methodology is preferable for two reasons - firstly it has been tested on a much larger scale than any of our competitors. For example, we have used it to consolidate across the whole of Europe or the entire Asia-Pacific region. Secondly, the IBM process will work with any client type whereas the majority of our competitors have more industry-specific offerings.

4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.
N/A

Geoplexing: A management methodology for IT optimisation

This version of the document created: 14th February 2000

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Summary

> **Legal note:** *Although the term 'Geoplex' is well understood within IBM and, for that reason, is used throughout this document, it should be noted that it is a copyright term with the copyright owned by AT&T. The term 'Geoplex' may be used internally but should be substituted by another term if used with external clients.*

This document contains details of a mechanism which has been successfully used to consolidate computer sites and support operations for an international manufacturing and services organisation. The document outlines the methodology, expected savings and lessons learned by the teams performing the consolidation exercises.

The mechanism has been used thirteen times in various parts of the globe to form Geoplexes - geographical data centre and support organisations

- In the USA and Canada where a range of diverse sites were consolidated into four delivery centres serving the entire continent

- In Asia/Pacific where services from a dozen countries were consolidated into two geoplexes operated from Japan and Australia

- In Europe and Africa where forty sites were consolidated into three geoplexes centred on the UK, France and Germany.

The document has been 'sanitised' to remove all reference to the original clients.

The geoplex: Definition and advantages
A geoplex is a geographical collection of data centres and supporting sites which operates as a single entity. It has a single logical management structure with one management system. This does not mean that local site managers will automatically be replaced by remote ones.

Although smaller sites may be consolidated into larger ones this is not always the case as savings may also be made from standardisation of procedures and adoption of 'best of breed' practices. In some cases, local legislation or employment law may prevent the optimum degree of physical consolidation from being achieved.

There are numerous advantages to forming a geoplex, or series of geoplexes, namely:

- The work force required to perform a set of tasks usually reduces by a significant percentage (see table 1) as the work force is consolidated and processes are standardised. This does not mean that hordes of people will necessarily become redundant as people freed may be utilised on other tasks or new business opportunities.

- A single management system across a geographical area allows standardisation of employee conditions, enhanced skill development and additional client focus.

- Larger geographical entities increase the organisation's bargaining power with its suppliers.

- Standardisation of procedures and practices across a wide geographic area makes the transfer of workload easier, reduces errors and allows the organisation's clients to be served in the same way across international boundaries.

- Operating on a wider scale increases the opportunities to form centres of competence or skill groups which can achieve more than dispersed skill pockets

- The consolidation of physical sites produces cost savings as site support costs are reduced although such savings have to be weighed against the costs incurred by moving staff, paying off leases and similar activities.

The 21-step plan

The methodology has twenty-one separate steps. Some steps require that earlier steps have been completed before they can produce any useful output. Other steps have no precursors. Depending on the exact characteristics of the organisation performing the consolidation it may be possible to adopt a high degree of parallel running of various steps in order to shorten the total elapsed time taken by the project.

The steps are discussed in detail in the following sections. Each step description contains a definition of what should be achieved within the step, what the possible problems are and what groups of the organisation will be involved.

The time taken to perform each step is highly variable and depends on the complexity of the consolidation being attempted and the nature of the original organisation. Rather than give an exact elapsed time for each step, the step descriptions give a relative time plus actions or events which will make a significant impact on the duration of the step.

The 21 steps are divided into four phases, each of which has a common theme. It is not possible to state exactly what cost and efficiency savings are expected from each step but it is possible to approximate the head count savings which should be achieved in each phase. The savings potentially realisable are listed in tables 1 and 2 below.

Table 1 should be used when the environment is essentially homogeneous and table 2 when the environment is more diverse. Homogenous environments share a common language, legal and cultural structure. A typical homogenous environment is the USA where, although each state has a slightly different legal system, there is a common federal framework and language. Another homogenous environment would be where an organisation contains subsidiary organisations which, even if not fully owned by the parent organisation, share a common legal framework and corporate vision.

Heterogeneous environments contain a diversity of culture, language and political systems and are typical of most of Europe, the Near- and Middle-East, Asia Pacific and Africa.

Skill group	Typical org.	Phase 0	Phase 1	Phase 2	Phase 3
Technical Support	35%	Nil	10%	20%	5%
Business Management	8%	Nil	Nil	10%	5%
Service Management	20%	Nil	20%	Nil	Nil
Help desk & Desk side	23%	Nil	10%	10%	5%
Operations	10%	Nil	10%	15%	5%
Others	5%	Nil	10%	12%	Nil

Table 1: Expected savings in head count terms - Homogeneous environment

Skill group	Typical org.	Phase 0	Phase 1	Phase 2	Phase 3
Technical Support	35%	Nil	5%	10%	2%
Business Management	8%	Nil	Nil	5%	2%
Service Management	20%	Nil	10%	Nil	Nil
Help desk & Desk side	23%	Nil	5%	5%	3%
Operations	10%	Nil	5%	7%	3%
Others	5%	Nil	5%	6%	Nil

Table 2: Expected savings in head count terms - Heterogeneous environment

The tables show the main skill groups found in a typical computer organisation (a definition of what kind of skills are in each group is in the appendix) and the percentage of the total organisation which forms each group. It should be emphasised that the typical organisation figures assume a wide spread of available technology. Organisations which are highly oriented towards a particular type of technology, such as mainframe or client/server, will show a skew in these figures.

The last four columns of each table show the expected head count savings achievable expressed as a percentage of the original head count.

PHASE 0: PRE-ANNOUNCEMENT PREPARATION
Phase 0 contains the first seven steps of the twenty-one step plan, most of which have to be complete, or approaching completion, prior to any general announcement of the formation of a geoplex. As it occurs prior to geoplex announcement there are rarely any savings as a result of phase zero.

Step 1: Determine number of geoplexes
The number of geoplexes required depends on a number of factors both within the company and externally. Internal factors include market reach, future strategy, the physical location of existing sites and the corporate culture. External factors include the political situation, economic factors, local language and regional legislation.

If the consolidation exercise includes several different countries, it is not necessary for countries in a geoplex to be physically adjacent although too many geographical divides does mean that communications will be harder in the future.

The result of this step is an exact definition of the scope of the geoplex or geoplexes.

Prerequisites: A thorough understanding of the business environment, future business direction and the social and political environment in the areas.

Time: Variable depending on gaps in knowledge and the commitment of senior executives.

Step 2: Appoint geoplex executives
Each geoplex requires a senior manager or executive (the exact reporting level will depend on the culture of the organisation) who is dynamic, visionary and able to see the wider picture across the entire geography of the geoplex.

Any savings imposed on the organisation 'from above' will probably be divided between geoplexes at this point.

Prerequisites: Board level buy-in. The output from step 1.

Time: Assuming a high degree of board-level buy-in, reasonably quick.

Step 3: Produce financial and head count baseline
In order to measure future savings and understand the business at a geoplex level a financial and head count baseline is required for the entire geoplex area. There are several key requirements for the baseline data, namely:

- Collecting the data is not a single, unique operation. The baseline data will be continually updated and must therefore be stored in a medium capable of accepting updates with enough control around it to prevent either unauthorised tampering or errors resulting from multiple updates.

- Depending on the diversity of the component parts of the organisation, it may be necessary to perform a rationalisation exercise during this step to 'translate' local names and skill descriptions into a common format.

- The data collection mechanism needs a way in which it can be co-ordinated with the appropriate organisation accounting mechanisms such ledgers and accounts payable. It may not always be possible to perform exact one-to-one correlations between geoplex data and organisational ledgers but the exceptions should not be numerous. An agreed mechanism for resolving any mismatches is highly desirable.

- If the geoplex covers an area in which several currencies are used, an agreed mechanism of converting to a common currency is required. Although many multinational organisations have a 'house currency' it may be more convenient to use another base in certain situations. The baseline needs to be insulated in some way from currency fluctuations which can make measuring the real savings almost impossible.

Prerequisites: The output from step 1. Probably names from step 2 (although the process can start prior to executive appointment there is no accountability or ways to influence more reluctant parts of the organisation until the executive is in place). Staff to consolidate and correlate the data. A central collection point defined.

Time: Depends on scope of the geoplex, willingness of different sites to work together and the degree of commonality already existing in the reporting and accounting of various geographies. Theoretically this can be a very quick step, in practice six elapsed weeks is a more reasonable estimate.

Step 4: Key support staff

It is necessary to put key support staff in place prior to performing any consolidation or geoplex project work. The project offices are defined more exactly in steps five and eight but there are other staff who will need to devote considerable time and effort behind the scenes. The number of people required will depend on the size and scope of the geoplex organisation. The roles which need to be covered are:

- Head count and resource tracking as defined in step 3
- Communications, including the external press office
- Client interfaces (if applicable)
- Legal
- Human Resources
- Procurement

It is not necessary for all these roles to be filled full time, especially in the earlier portions of the project duration. Named resources are required, potentially at short notice as the project develops and it is essential to agree who will be responsible for supporting which function in advance.

Prerequisites: The output from step 1 and possibly the executive name from step 2 (for the same reasons as it is needed for step 3).

Time: Depends on the degree of centralisation of the functions within the existing organisation and the scope of the geoplex geography. If the consolidation is within one country this step will be quick. If it is multinational the step will be more complex.

Step 5: Set up central project office

A central project office is only required if the plan involves the creation of more than one geoplex. If the consolidation is into a single geoplex this step is not needed as the actions performed by the central project office are not required and the local functions will be found in step eight.

The role of the central project office is to co-ordinate the actions of individual geoplex project offices, consolidate statistics and reporting for senior management, understand and facilitate common plan items, ensure all geoplexes are aware of the actions of others and the likely consequences and make sure that lessons learned in one geoplex are communicated to the others.

The central project office requires a leader with easy access to executive level management and one member in each geoplex. Although holidays and similar absences need to covered there is little to gain by having additional people from the geoplexes in the central project office. The central office may also contains communications and administrative resources if the scope of the project so warrants.

Prerequisites: Steps 1 and 2. Maybe step 4 depending on source of project office personnel.

Time: Very quick once the appropriate people have been agreed.

Step 6: Understand Human Resource situation

The human resource background needs to be thoroughly understood prior to making any plans for the geoplex (or geoplexes). Key items which must be understood include:

- The effects of local legislation on employee transfers
- Comparative salary and benefits of the geographical areas involved in the geoplex
- Linguistic and cultural differences

The best way to handle this step appears to be for central HR experts, with legal council if necessary, to work with local human resources personnel in order to build a list of effects the local human resources environment will have on the geoplex plan process. Where the geoplex is completely within one country or a group of closely related countries (eg: USA/Canada, Norway/Sweden/Denmark, Australia/New Zealand, Syria/Jordan) the resulting list of differences which need to be taken into account may be very short or even non-existent. In a more geographically diverse environment the list may include:

- Plan delays required to allow consultation between management and workers representatives such as works councils or unions
- Actions required to obtain agreement in partially owned subsidiaries
- Plan items required by law in one country or group of countries but not others
- Differences in local accounting practices, currencies and methods of doing business
- Plan delays required to account for decision processes which rely on consensus rather than individual management
- Employment legislation which means certain employees can not be laid off or reassigned until after a set of predetermined steps have been completed
- The effect of local animosity between parts of the geoplex (hopefully this will be taken into account in step one!)
- Diverse legal entities such as partly-owned subsidiaries

Prerequisites: Steps 1 and 4. Steps 2 and 3 are helpful but not absolute prerequisites.

Time: Highly variable depending on geographic scope of the geoplex and the degree of HR differences which exist.

Step 7: Produce communications plan

Unless there is only one geoplex - in which case this step may optionally be absorbed into step 8 - it will be necessary to provide some kind of overall communication plan for the activity. The communications plan has several elements namely:

- Communications within a geoplex
- Communications about common interests across all geoplexes
- Communications to external organisations such as clients and suppliers
- Corporate media communications

What is included in the scope of the communications plan, the means of delivery (e-mail, road shows, intranet etc) and the data feeds into the communications office will depend on the scope of the geoplex and the culture of the organisation. Previous uses of this methodology have shown that there are three distinct stages to the communication offering and the primary role of communications varies in each phase.

- Geoplex announcement. Defines the geoplexes and lets employees involved know what is going on. The primary role of communications in this stage is to inform and reassure during a period of change.
- Ongoing plan execution. Regular status reports allow employees to make sense of the events happening around them. The primary role of communications at this point is to help build a shared sense of community. Because of the rate of change in the organisation it can be difficult to obtain data feeds during this phase and it may be necessary to allow time to pester the project offices for data.
- Termination. Signals the end of project mode and a return to 'business as usual' running, outlines the savings made and what this means in the future. The primary role of communications in this phase is informative and (hopefully!) congratulatory.

It is important that once the geoplex project finishes, a means of communications is left in place to allow future team building and ongoing data cascade.

Prerequisites: Step 4. Step 5 if applicable. Step 6 is helpful in developing the strategy for communications but not an absolute prerequisite.

Time: Reasonably rapid since the activity is 'stand alone' once the prerequisite steps are in place.

PHASE 1: ORGANISATIONAL INTEGRATION
The organisational positioning phase contains eight of the twenty-one steps which build the management structure and management system. Organisational changes will produce some savings, especially in client-facing positions such as service management.

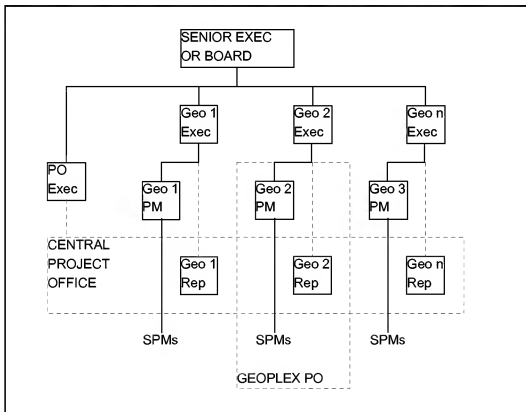### Step 8: Set up individual geoplex project office
The geoplex project office contains the overall project manager, any sub-project managers, administrative resources and one person in the central project office, if one exists. The role of the project office is to run the geoplex project within the scope of the geoplex and, as such, it's first key deliverable is the high level plan on how to complete the remaining steps of the plan.

Although none of the following points are absolute rules it has been found helpful if:

- The overall project manager reports directly to the geoplex executive for the duration of the project

- The central project office representative for the geoplex and the geoplex project manager update each other at least weekly

- The baseline and measurements data collection professionals are included in the project office for the duration of the project

- The project office has rapid access to both HR and legal advice

- The project office has a means of linking with any previously-created geoplexes to learn from their experiences

If there is more than one geoplex it is not necessary for the project offices to be constructed in the same way. Assuming the existence of a central project office, the final project management structure will look like that shown in the following diagram:

Prerequisites: Most of phase 0 must have completed by this stage

Time: Very quick

Step 9: Develop new organisation

It is up to the geoplex executive to develop his or her organisation, taking into account the geographic spread of the geoplex, existing organisation, future plans and internal politics. As discussed in step 10 (below) it is not necessary to define the entire organisation, only the high level outline which should be by functional group rather than geographic position.

Management should be arranged by functional group wherever possible. Direct reports to the geoplex executive should have functional responsibility across all geographies or sites included in the geoplex or the full level of savings will not be realised. Although some functions are difficult to centralise (for example, service management staff tend to need to be physically near their client) there is no reason why the management of such functions should not be centralised.

A geoplex executive may wish to appoint an overall steering committee at this point to review progress of the project. This can be helpful but is not an absolute requirement.

Where there is more than one geoplex it is not necessary for each one to have the same organisational structure.

Prerequisites: Phase 0 complete or mostly complete. Step 6 is critical.

Time: Depends on the politics of the organisation and the decision making process. Indecisive executives or those in countries which require prolonged consultation prior to decision making may take a considerable time over this step.

Step 10: Appoint new management team
This step involves fleshing out the skeleton organisation created by the geoplex executive by appointing specific people into the positions defined. Again, the decision making methodology and the politics of the organisation will determine how long this step takes.

Once the functional managers are appointed, each one needs to further define his or her organisation. This will require a lot of input from steps 3, 4, 6, 11 and 15.

The following guidelines have been found to be helpful but they are not obligatory and may not apply to all organisations:

- There should be no more than three layers of management below the geoplex executive, regardless of the size of the organisation

- The span of control should be maximised

- Management should be arranged by functional group wherever possible. Although some functions are difficult to centralise (for example, service management staff tend to need to be physically near their client) there is no reason why the management of such functions should not be centralised.

- It is desirable to have representation from several constituent countries in the senior management team as this encourages participation across the physical geography and maximises the breadth of local experience available at senior levels.
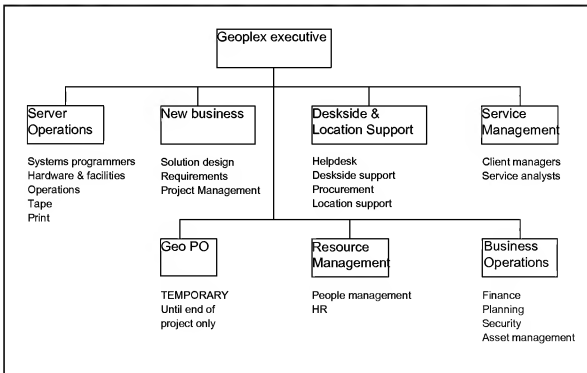
- The best appointees do not always reside in the senior levels of the component organisations but may be one level down. Unless the geoplex is very small, it is unlikely that people more than one level down will have had sufficient management experience to hold a senior geoplex role.

- With a functional top layer of management within the geoplex the second layer should generally not be geographically aligned or the full level of savings will not be realised. Service Management, Resource Management and Legal groups are probably exceptions to this rule.

- Most countries require that an employee has an 'in country' career manager for tax and legal reasons. A resource / task manager split is a viable way around this requirement where it exists.

Depending on the preferred method of working each functional manager may be asked to provide a sub-project manager to the geoplex project office.

At the end of step 10 the organisation should be complete to the level that each individual employee knows his or her reporting chain both for task and, if different, personal management. The organisation will be balanced, understood and within legal and HR guidelines.

A typical organisation structure is shown in the following diagram:

Prerequisites: Steps 2, 6 and 9 for the management appointment. Input from steps 3, 4, 6, 11 and 15 is required to build the entire organisation.

Time: Unless the geoplex is very small, it will typically take several months to progress from initial agreement of the high level organisation created in step 9 to the completion of this task.

Step 11: Geoplex profile
The creation of a geoplex profile is essential to the completion of most of the following steps. The profile is a listing of all the resources in a geoplex, their location and use. A typical profile will contain at least the following information:

- The size, location and type of all servers, major network termination boxes and key items of hardware

- The software running on each server

- The skill profile of everyone in the geoplex plus their physical location and reporting line

- All the clients supported by the services listed above and which components are used to support which ones

- Information on physical sites within the geoplex

Some of this data may be easily available - the output from step 3 is helpful in consolidating skills and much of the rest may be available from asset management. However, in some organisations the data is fragmented or so out of date that a complete inventory is required. Once the profile is complete, management will be able to identify what resources are where and which resources are used to support what parts of the business. Isolated skills or equipment will also be easily recognisable.

The following points may be helpful when compiling the profile for the geoplex:

- There is no 'right' way to present the data and if there is more than one geoplex it is not necessary for all geoplexes to consolidate their data in the same way. Often the format will be defined by which reports are easily available. However, a common nomenclature and overall framework will facilitate the task, as well as making and additional geoplex activity easier.

- The profile leans heavily on the output from step 3, the completion of which is a major help when building the skills part of the profile.

- Asset management is likely to be the prime source of data for everything other than skills. A good asset management methodology can drastically reduce the complexity of this task.

- The profile data is not static and a mechanism needs to be found to keep it up to date in line with equipment, site or infrastructure changes.

- Where data isn't available within a reasonable time frame it is possible to proceed without it as long as no key decision is based on a simple guess or extrapolation.

- It is helpful to define a cut off level for data below which information need not be collected. For example, it may be sufficient to say that there are 100 desktops at site X, the fact that 93 are Windows 95, 5 OS/2 and 2 Unix may not be necessary. Defining the cut off point for data can also save a lot of time in the process.

- The completed profile will be a key descriptor document of the entire geoplex and should therefore be treated with sensitivity. Where security classifications exist within the organisation the profile document should be classed as at least confidential.

Prerequisites: Step 4. Data from steps 3, 9 and 10 can be useful but as the profile can take a long time to create there is benefit to kicking off the work as soon as possible.

Time: Highly variable depending on availability and reliability of the source data, the size of the geoplex and the number of people available to collate the results. Assuming no major delays collecting data and two people to collate the task will take about a month for a reasonably sized geoplex.

Step 12: Integrate 'quick wins'

The profile from step 11 and the output for phase 0 will allow management to identify 'quick wins' - savings which can be made quickly and easily. Although such savings may be very small there are several benefits to taking them sooner rather than later:

- The quick win provides evidence - via the communication process - that the geoplex can deliver on its earlier promises

- Depending on the size of the geoplex, there are potentially several quick wins available which add together to a significant saving, especially since the resources are saved early rather than at the later 'logical time'

- By eliminating quickly wherever possible the planning is simplified and there is less chance of a small saving being forgotten

The nature of 'quick wins' will differ from geoplex to geoplex depending on the social, political and geographical factors. The existing client portfolio and locations of key suppliers and clients may also have an effect. Candidates for quick wins include:

- Resiting or removing single items of equipment

- Adjusting workload and responsibilities where isolated skill groups exist

- Closing or reassigning space in sites with low floor space utilisation

- Planning consolidated education rather than on a site-by-site basis

This does not mean that every incidence of the above will automatically be a quick win, but there should be enough potential savings to warrant the investigation.

Prerequisites: The profile from step 11 and phase 0 virtually complete.

Time: Identifying quick wins should be fairly rapid once the profile is available. Implementing them may take much longer especially if some of the delays listed in step 6 have to occur or if it is more efficient to group quick wins for ease of implementation.

Step 13: Determine central .v. local
Once the profile from step 11 is available, it is possible to identify which items can potentially be centralised. Within a geoplex there will always be items which have to remain local and step 13 is where they are identified. At the end of this step the resources available to a geoplex will be categorised into four groups:

- Resources which can be centralised. Examples of such resources are servers into server farms, systems programming expertise (although not necessarily the people) or the closure of a small satellite site resulting from decamping its contents into a neighbouring large site.

- Resources which could be centralised but where there are convincing technical or organisational reasons why such centralisation may be a bad idea. An example of this is where an e-mail server has been located in a specific site to provide e-mail connections between the users of that site in order to minimise bandwidth or improve delivery times. Removal of such a server would severely impact the users of the site and increase bandwidth requirements.

- Resources which could be centralised but where there is a sound cost reason for not moving them. If the cost of moving a resource is greater than the cost of keeping it where it is there is no point considering a move unless a big gain can be obtained elsewhere. For example, if it costs more to move an isolated group of 10 systems programmers than to keep their desks at a remote site the move is pointless unless it has a knock-on saving such as allowing an entire site closure.

- Resources which have to remain local. Examples of such resources are those contractually located on a client site or linked to other equipment which can not be moved.

Once the resources which have to remain local are agreed they may be removed from any further planning.

There may be some non-technical reasons why functions or equipment have to remain local. A list of possible causes is given in the description of step 6. One possible way to address this is given in the 'lessons learned' section.

Prerequisites: Steps 6 and 11.

Time: Comparatively quick once the profile is available unless there is a prolonged debate about technical effects occurs. An elapsed month should be sufficient time for all but the largest and most complex geoplexes. This step may run in parallel with step 12 and uses most of the same input data.

Step 14: Develop management system
There are two management systems required within this step. The first is the overall geoplex management system which needs to be prepared first either by the project office or the geoplex executive's staff group. This management system must be able to support any higher corporate objectives while allowing timely management of the geoplex.

The second management system is the one used to support the overall management system which is created by each of the functional managers. Again, these systems may be created by the project office or by staff personnel within each functional group.

The implementation of the management system needs to include the following:

- Interlock with other geoplexes if required. The management system need not be identical to that in any other geoplexes as long as they inter link where they have to and all geoplexes possess a standard form.

- Interlock with the requirements of the organisation board or senior management

- Timely reporting and feedback

- A means of managing out of line situations (good and bad) and bringing them back in line where necessary

- A means of allowing for the legal, linguistic and cultural diversity which may exist within the geoplex

Prerequisites: Steps 6 and 10.

Time: Depends on decision making process but typically rapid for even large and complex geoplexes

Step 15: Perform skill analysis
Each functional group will need to perform a detailed skill analysis of the people within its scope of control and understand where there are gaps and overlaps. Once understood the information can be consolidated into any quick wins or used to build the lower levels of the final organisation. Much of the data can be lifted directly from step 3 but it may be necessary to use greater granularity in this step. Points which have been noted in previous implementations of this step are:

- This step may provide a way of evaluating the suitability of possible second line managers

- It is possible to identify possible quick wins from this step although isolated skill pockets do not always equate to a quick win. Before determining if consolidating isolated skills are quick wins or not, it is necessary to understand the entire local environment - the skill data collected here is not sufficient alone

- In geoplexes which cover several diverse countries, language issues may force the retention of isolated skill pockets

Prerequisites: Steps 3 and 6 and the first part of step 10.

Time: Related to the completeness of data from step 3 and the size of the geoplex. This step may be very quick.

PHASE 2: STANDARDISATION

This phase contains three steps of the twenty-one step plan and concerns the consolidation of processes and procedures. This is the phase which realises most savings as standardisation and streamlining often produces considerable productivity benefits.

Step 16: Understand processes and methods

In order to standardise processes it is necessary to understand what processes are in use and for which purposes. In some organisations this may be dictated 'top down' which means that there will be little local divergence. In other organisations each site or country may have evolved its own processes resulting in considerable differences. The questions which need to be answered in this step are:

- Which processes are in use and what do they do?

- Who uses them?

- What tools and methodologies are in place to support each one?

Once these questions are answered, it is necessary to apply the results of step 13 to understand if there are any processes which, for any reason, can not be altered. If so, various aspects of the process may have to be placed out of scope.

Prerequisites: Phase 0 complete. As this step is purely investigative, if the people are available to perform the analysis it does not depend on organisational aspects.

Time: Depending on the number of processes in scope and the size and cultural diversity of the geoplex this may be a massive task. It is possible to run the three steps in phase two roughly in parallel as long as this step is given a slight head start in order to provide information which can be used in the two following steps. In small organisations where the processes are imposed 'top down' this step may be comparatively simple.

Step 17: Assess processes and methods and understand Best of Breed

Assessment of the processes located in step 16 is a three stage process.

- Determine and agree the assessment criteria. In some cases this may be facilitated by having benchmark data but in many cases it will be open to debate.

- Determine the definition of 'best of breed'. Many processes are unlikely to contain metrics and the definition of which version performs best is often purely subjective. It may be necessary to perform some standardisation of terminology and process scope before this task can be performed. There are three tactics which can be used to determine 'best of breed' which are discussed later in this section.

- Determine which processes need to be changed. There are four considerations involved in this decision. Firstly, some processes may be so specialised or so close to the 'ideal' (however that is defined) that there is no benefit to tinkering for the minimal improvement which will result. Secondly, it is possible that later events will make the need for change obsolete (for example, there is little benefit to changing the problem management process at site X if site X will be closed in the next three months). A clear set of priorities by

comparing the entire plan is therefore needed. Thirdly, a process may be closely inter linked with other methods and processes within the geoplex so that any change will have a widespread disruptive effect. In such cases the additional disruption may prove to be a barrier to any change of the original process, however non-standard it is. Finally, it could be that the process is used by and affects so few people that standardisation simply isn't worth the effort.

The three tactics which can be used to standardise on the 'best of breed' are:

- Where processes are essentially imposed from elsewhere, whether this is higher up the organisation or from an external agency, the imposed process is the best by definition. It could be argued that if there are several geoplexes the method adopted by the majority is the best even although it is not necessary for different geoplexes to standardise their processes.

- Where some metrics exist, even if they are incomplete, a more objective method can be used to determine the best of breed. For example, even if a problem management process produces no metrics itself, it may be possible to compare the number of people involved or users perceptions of the fix time.

- Where the main aim is simply standardisation to reduce overheads, the most common process is the best. This means that 'the best' is defined as the method used by the majority even if this is in some ways inferior to the alternatives.

There are two ways to assess processes in the geoplex. Either a dedicated group of process experts reviews all processes or each functional manager forms a team to review the processes which directly affect him or her. Although there may need to be up-front debates about who owns various cross-functional processes, the second method has been found to be superior in most cases.

Prerequisites: All previous steps except 12, 14 and 15 complete or nearly complete.

Time: This step can involve considerable, occasionally acrimonious, debate and the time it will take should not be underestimated. Even a small geoplex may have twenty processes which need to be standardised and it is quite possible for this step to last a year. Fortunately, as stated in step 16 above, it is possible to run this step mostly in parallel with steps 16 and 18.

Step 18: Implement processes
The standardisation of processes is a subproject in itself. Standardisation can range from minor definition adjustments to the replacement of supporting tools or replacing entire processes with new ones. Which degree of change is needed for which process depends totally on the local conditions within the geoplex and can not be predicted. However, some factors may affect the degree of change allowed, namely:

- The resources available to perform the change and any follow on activity (eg: education)

- Disruption to ongoing business. Internal disruption will require management focus and control to prevent it becoming visible to client organisations while the changes are

occurring. Practices such as dual running or phased installations may need to be considered to insulate clients from the effects of the change. It may be necessary to proceed at a slower than optimum rate in order to protect the integrity of client-facing processes.

Where the resources are stretched and the disruption is high there has to be a convincing case to take the maximum change option. The advantages and disadvantages of each degree of change are shown in the table on the following page.

Option	Advantages	Disadvantages
Minor changes only	• Minimal disruption • Quick to perform • Low resource requirement	• Can only be used when processes are slightly divergent • May not provide sufficient standardisation to realise savings
Reworking of tools or implementation methods but no change to basic process	• Higher degree of standardisation • May not require many resources • Can save licence costs • Support easier once conversion is completed • Process comparison easier	• Can result in a high degree of internal disruption requiring careful management to prevent it appearing in any client-facing situation. • Need to retrain some or all users of the process • May require knock-on changes in areas which don't really need changing • May be language or cultural issues
Major change of process	• Highest degree of standardisation hence highest savings in people, time, efficiency, licence costs etc. • Process comparison easier • Centralisation simplified	• Usually considerable internal disruption requiring management effort to control and insulate clients from the effects. • Post-change education, documentation etc. can be a big task in its own right • Requires changes to all interfaces • May be language or cultural issues

Of course, it is possible than a process will require the highest degree of change in only limited sites or countries within the geoplex.

Prerequisites: Step 17 (at least for the processes to be modified)

Time: Highly variable but typically 12 to 24 months for a large geoplex. As stated in the descriptions to step 16 and 17, this step can run in parallel with them to a certain extent.

PHASE 3: PHYSICAL CONSOLIDATION
The final phase contains the last three steps of the twenty-one which are concerned with physical consolidation. This phase does not usually realise a lot of head count savings but does bring cost reductions associated with the smaller property portfolio.

Step 19: Site strategy
This step defines a cohesive site strategy for the geoplex. The site strategy is the blueprint used to consolidate physical sites to the optimum number, which may or may not be the same as the minimum number. Factors which affect site strategy are:

- Skills. Where a site has a critical mass of several skills the cost of relocating the skill base can be prohibitive. There is also a danger of the skill base being severely eroded by voluntary severance, especially if there is a range of alternative employers in the proximity.

- Technology. The availability of technology or the cost of transferring it may limit the options available. This is especially true with larger or older equipment which often has more restrictive environmental requirements such as a cooling water supply or humidity control.

- Infrastructure. The quality of supporting infrastructure is critical to a site, especially one containing large numbers of servers. UPS/CPS, dual power supplies, proximity to local transport links, proximity to third party support (eg: hardware engineers) and the attitude of the local government authority can all be limiting factors, not all of which can be easily overcome.

- Clients. Certain resources may need to be close to client locations. Resources located on client locations are not usually candidates for a move out although it may be possible, with the client's agreement, to move additional resources into the client site. This approach is cheaper but does have associated risks.

- Contractual and legal issues. Legal issues can restrict site consolidation options. For example, there may be legislation which restricts the physical location of operations staff with access to sensitive data (eg: Norway), legislation which controls encryption requirements (eg: the US) or controls on the way personal data is handled (eg: the EEC). There may also be clauses in existing client contracts which limit the options available. While these may possibly be renegotiated, the process can be time consuming.

- Ownership. The ownership of a site is a limiting factor. While the organisation may own a site outright it may also be leased, jointly owned or be a client site occupied by the organisation's resources. There are unlikely to be any restrictions in the first case but there are possible implications in the others.

- Organisation strategy. The organisation may require certain sites for the successful implementation of it's future strategy.

- Service considerations. Closure of too many sites leaves an organisation unable to recover in the event of a disaster. While the risk may be small, the loss of a significant portion of an organisation's IT resources can be fatal in the modern e-business world.

- Social constraints. There are some societies which have a degree of social stratification where there may be considerable political fallout if relocations or closures result in once strata being harder hit than others. The HR specialists (see step 6) are invaluable in understanding this effect and minimising the impacts where they occur.

The mechanism used to develop a cohesive site strategy will depend on the organisation, the degree of centralisation of the existing property portfolio and how widespread the sites within the geoplex are. The size of the site clearly determines how easy it is to relocate the resources it contains but it does not automatically mean that small sites should be consolidated into larger ones.

Prerequisites: Phase 0 and most of Phase 1.

Time: Depends on the size of the existing geoplex portfolio, the decision making process and the number of extraneous external factors. There is no simple correlation between any of these factors and the time taken.

Step 20: Centralise asset management and planning

Centralisation of asset control and the associated disciplines of procurement and physical audit can provide large savings in two ways:

- Equipment standardisation and reuse is facilitated resulting in lower reorder and support costs.

- The negotiating power of an organisation is greater if it negotiates on behalf of a geoplex rather than on a site-by-site or country-by-country basis. Savings of up to 60% have been achieved on software costs with certain vendors.

The means by which asset control is consolidated depends on the degree of centralisation already present in the organisation. It is possible for asset control to be delayed if the supporting financial processes require prior consolidation. If this is the case, there is a strong case for making any associated financial processes the first ones to be reviewed in phase 2.

The mechanisms required to perform consolidated asset control are likely to be in place for larger assets, such as mainframes, but not for smaller ones - especially disposable ones such as floppy disks. The degree of effort required to centralise control of smaller components, and the quantity of red-tape which can be generated as a result, may be prohibitive to centralising control of small disposable assets such as printer cartridges or paper. The best method appears to be to appoint preferred suppliers for smaller items and centralise control of larger ones with individual PCs being a reasonable cut off point. Whatever the level of control decided, it is essential that it is agreed by the geoplex executive(s).

Prerequisites: Phase 0. Phase 2 for financial services if financial consolidation is required

Time: Depends on the number of resources, the agreed scope of asset control and the decision making process. For a geoplex with a variety of sites and currencies, this step will take between six and twelve months.

Step 21: Perform physical consolidation
Once the prerequisite steps have been completed, it is possible to perform the agreed site consolidations. Each consolidation will be a subproject in its own right which may last over several years. Larger consolidation subprojects may require their own project office with associated communications and administrative staff.

If the twenty-one step methodology has been followed, all prerequisite actions should have been taken and issues such as HR considerations, overall site strategy and the location of skilled resources will have been resolved.
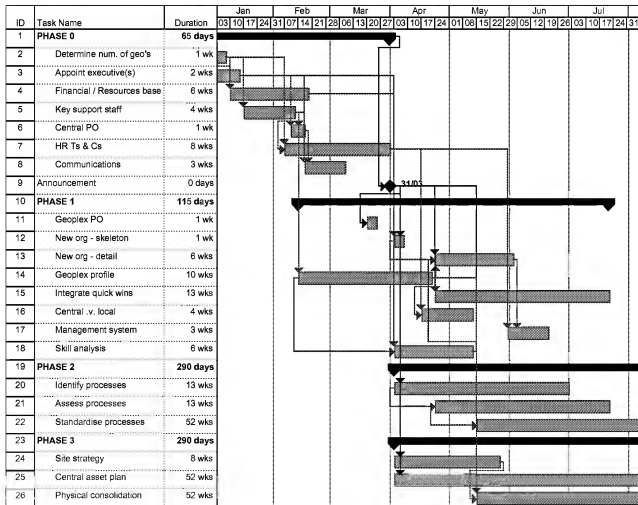
Prerequisites: Steps 3, 4, 6, 11, 15 and 19

Time: Highly variable depending on scope and complexity. It may take up to two years to complete the consolidations in a medium to large geoplex.

Typical project plan

The following plan outlines the key points and uses time durations derived from those actually observed in previous iterations of this methodology. Because of the variety of project management tools available the plans are presented as Gantt charts only. Tasks 22 (step 18), 25 (step 20) and 26 (step 21) have been truncated for ease of printing. On this plan the overall finish date is in the second quarter of next year.

Note that the plan assumes 5 day working weeks and no intervening holidays. An allowance for local vacations will therefore need to be added into the plan. A moderate degree of negotiation time has been included but in cultures where there is a prolonged decision making process or strict employment legislation some steps - especially steps 6, 18, 19 and 21 - may need to be considerably extended. The plan starts on 1st January in order to make the elapsed times clear.

ID	Task Name	Duration
1	PHASE 0	65 days
2	Determine num. of geo's	1 wk
3	Appoint executive(s)	2 wks
4	Financial / Resources base	6 wks
5	Key support staff	4 wks
6	Central PO	1 wk
7	HR Ts & Cs	8 wks
8	Communications	3 wks
9	Announcement	0 days
10	PHASE 1	115 days
11	Geoplex PO	1 wk
12	New org - skeleton	1 wk
13	New org - detail	6 wks
14	Geoplex profile	10 wks
15	Integrate quick wins	13 wks
16	Central .v. local	4 wks
17	Management system	3 wks
18	Skill analysis	6 wks
19	PHASE 2	290 days
20	Identify processes	13 wks
21	Assess processes	13 wks
22	Standardise processes	52 wks
23	PHASE 3	290 days
24	Site strategy	8 wks
25	Central asset plan	52 wks
26	Physical consolidation	52 wks

Lessons learned

The following lessons were learned during prior implementations of this methodology. Although they may not apply in every instance, they are reproduced here as an aid to future planning

Management buy-in
Organisation senior management buy-in is essential to the geoplexing process. An absence of clear vision or lacklustre leadership can greatly increase the time taken within each step. Assuming organisation senior management are committed to the process the same then applies to the appointment of the geoplex executive(s). The most successful geoplex executives appear to be visionary with a degree of pragmatism. They communicate regularly and maintain a clear sense of momentum throughout the project. It is comparatively easy for other pressures to divert executive focus from the formation of a healthy geoplex, especially after phase 0 is completed. The formation of a steering committee and the appointment of a strong project manager can help.

The management team must be able to capture 'hearts and minds' of the professionals within their geoplex. If they can not inspire and define the benefits the process is unlikely to realise its full potential savings.

Investment
Management must not be afraid to invest in order to make the geoplex process a success. Although some money is required - especially for travel if the geoplex covers a large geographic area - the key investment is in staff time and communication. Key staff, especially HR and the subproject managers, need to be dedicated to the geoplex project for the duration. Staff with roles which last only for one or two steps, such as those compiling the profile or resource baseline, need to be dedicated for the duration of their tasks.

The number of key staff is comparatively small but while they are engaged they can not also be involved in a 'day job'. As an aid to forward planning the following list contains the key staff within a geoplex formation project:

- Project Manager (throughout)
- Subproject managers (for duration of subproject)
- HR advisor (throughout, but especially in steps 6, 10, 15, 18, 19, 20 and 21)
- Profile compiler (step 11)
- Functional managers (once appointed)
- Legal council (throughout)
- Process experts (Phase 2)
- Location specialists (Phase 3)
- Resource specialist (throughout but especially in step 3)
- Communications specialist (throughout but especially in phases 0 and 1)

- Central PO managers (if more than one geoplex)

Big picture
It is comparatively easy to perform one task which is made redundant by later events. A comprehensive project plan which examines all the interdependencies and regular reviews between senior managers, the geoplex project manager and the subproject managers are essential. Although it can be difficult getting this number of people together, the regular face to face consultation each month does seem preferable to teleconferences or e-mails. Examples of the type of activity which can benefit from this type of review include:

- Scheduling process conversions with site closures so processes are not converted where the site has a short life expectancy
- Scheduling education with people moves so skill pools aren't educated twice (or are missed completely)
- Inter linking site strategies with asset strategies
- Ensuring that a combination of subproject actions aren't combining to form a major drain on a specific resource
- Prioritising investment for items such as travel
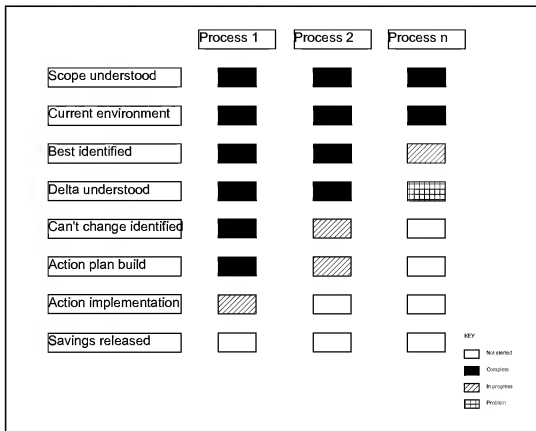
Competency tracking of process change
It can be difficult to track process change across an organisation. One tried mechanism is to divide processes into functional groups so that one functional leg of the organisation (and therefore one manager and one subproject leader) is responsible for each process. Although this may require some up front negotiation as to which process is handled by which functional group it appears preferable to having processes not clearly owned which can result in either multiple standards or the process being ignored.

Once each process has a functional owner progress of conversion can be mapped to a simple series of steps which are listed below:

- Understand process scope
- Review process as it is implemented throughout the geoplex
- Define 'best of breed'
- Understand delta between 'best' (however that is defined) and the process as it exists at each site
- Understand which implementations of the process can not be altered for whatever reason
- Build action plans to implement changes at the sites where change is possible
- Implement action plans
- Realise or release savings

This approach allows progress to be simply reported and mapped to savings either by process or by functional group as shown in the chart below.

Depending on the local environment, some of these steps may need to be expanded. Note that it is possible to be working on some of the steps simultaneously.

Organisational change

There are possible problems when moving from a site- or country-based organisation to a geoplex-wide function organisation including:

- Lack of management buy in
- Confusion among employees, possibly over a prolonged period
- Disruption to day-to-day running of the business

One method which minimises the possible problems is described here. It was used to successfully migrate a group of approximately **3,000** people from a country-based organisation to a functional organisation over an elapsed month. The essential prerequisite is that the management team involved are all appointed and the target organisation is announced. The method has four steps

- Prepare the matrix shown below. This is a map of the new organisational groups onto the existing regional (site or country) organisation. Each cell in the matrix corresponds to a given functional group located at a specific location.

- Populate the matrix with the people within the organisation. Some cells in the matrix may be blank if a skill group does not exist at a given site or in a specific country.

- Give the existing site or country managers responsibility for one cross functional group, thus effectively transferring the primary reporting line from country or site to function.

- Each functional manager has three responsibilities. Firstly he or she has to facilitate the transfer of control of people who were in his or her regional organisation but not in his or her functional group. Secondly, he or she has to actively take on people who are in his or her functional group but not in his or her country. Finally, once the responsibilities have been completely transferred from region to functional group he or she has to dismantle any parts of the country management framework which are no longer required.

	Region 1	Region 2	Region 3	Region 4
Functional group A				
Functional group B				
Functional group C				
Functional group D				

The advantages to this method are:

- There is total management buy in

- Disruption is minimised. Not only will transfers by synchronised by the managers themselves but the number of people in each cell of the matrix may be used to ensure the minimum number of changes in reporting lines.

- The process is quick to implement (assuming all prerequisite HR activities have occurred) and easily communicated.

Partly owned subsidiaries and remote staff
It is possible for the new geoplex to include resources which are either partly owned or very remote. This can bring problems of communication and isolation.

- A special effort needs to be made with staff who are physically remote or located at sites which are unlikely to change (such as at a client-owned facility). Such staff are easily susceptible to the "it doesn't affect me" syndrome which is not true. Even if local management and location do not alter, support processes and the rest of the geoplex will.

- Staff who join the organisation during a period of change are likely to be very disoriented and additional personal management care may be required. Regular communications help as does an induction talk explaining the geoplex idea which is delivered during their first week or so with the organisation.

- Staff who are part of partly owned subsidiaries usually have to be treated separately until the subsidiary partner has agreed to the geoplex plans. This means that separate communications and consolidation plans may have to be in place until agreement has been reached. If agreement is unlikely it may be better to count the subsidiary in the 'must remain local' group and readdress the issue when the rest of the geoplex plans are complete when the full benefits realised can be used as leverage.

When it is necessary to have a separate plan for a subsidiary organisation the way the subsidiary is integrated with the main plan depends on local conditions. In some cases it may be possible to perform a phased integration, in others integration may not occur. In either case, care needs to be taken that process changes include interfaces to the non-integrated portions of the organisation.

Competencies

Although possibly unnecessary with only one geoplex, as soon as there is more than one there is benefit to investing effort in the creation of a guiding board for each functional group. This will ensure that each function progresses in approximately the same direction, therefore:

- Facilitating subsequent consolidation efforts

- Allowing easier evaluation of processes and methods and publication of 'best of breed'

- Allowing the development of meaningful comparative metrics

- Facilitating the opportunities for synergy in tool sets which further increases standardisation and improves the organisation's bargaining position when dealing with third party suppliers

- Allowing the development of common training courses, qualification processes and career paths

- Allowing the sharing of generated intellectual capital

It has been found that large organisations typically require a 'steering committee' of around four or five people per functional area with two of the 'steering committee' being dedicated full time to the role. Although this is an overhead, the payback is considerable as long as the functional area is not too restricted in scope. Functional areas which have been shown to work well in the past include all those listed in the appendix.

Local cultures

When the geoplex covers more than one country local cultural differences have a large impact. From a planning viewpoint these are limited to the decision making methodology and local HR regulations. However, the ongoing success of the geoplex depends on the interaction of different cultures and this needs to be taken into account early in the planning cycle. The confusion which

can be caused by cultural clashes and the good will which can be lost through insensitive handling of local issues can not be overemphasised.

Travel

Unless the geographic area covered by the geoplex is small, there will be a need for travel, especially during phases 1 and 2 of the plan. Although it is possible to perform much of the interaction by e-mail or telephone, there are considerable benefits to face-to-face meetings, at least initially. The absence of such travel can elongate plans considerably.

With a multinational management structure travel is likely to become a way of life and the cost, time and cumulative health constraints have to be taken into account.

Continuing geoplex activity

It is theoretically possible to continue geoplex activity to consolidate still further if this is required. In practice this requires that any intermediate stage of the process is given time to reach an equilibrium and that any intermediate geoplexes are made as similar as possible to allow further consolidation. Items which may determine the ability to geoplex further include:

- Local cultural and legal issues
- Practicality of operations (such as disaster recovery, provision of sufficient local work forces etc.)
- Internal morale and staff issues
- Client requirements

An example of such 'two stage' geoplex activity is shown in the diagram below:

Individual Operations

| Germany | Poland | Norway | Sweden | Estonia | Latvia |

Czech Republic

Denmark

Lithuania

Stage 1

Geoplex 1

Geoplex 2

Geoplex 3

Stage 2

"Europlex"

Appendix

Definition of skill groups

The following definition of skill groups was developed for use during the European roll out of this process. It appears to cover most of the skills likely to be found within a typical computer centre.

- Business Operations. Finance; planners; strategists; security - both physical and logical; business controls; procurement; asset management; communications; space planning; Quality Assurance; process management.

- Desk side support. Desktop technical support; cable layers; desktop engineers; local LAN, token ring or ethernet managers.

- Help desk. Help desk agents; first line technical support; user administration.

- Operations. Console operators, tape operations, tape librarians, archivists, print operations.

- Resources Management. People managers; recruitment; education.

- Service Management. Customer facing executives; service managers; service analysts.

- Solutions Management. Solution designers; project managers; transition specialists.

- Technical Support. Systems programmers for all platforms; hardware planning; site facilities planning; technical solution design: technical planning.

There are some functions which could be located in more than one group. Some functions may be performed by the project office while in project mode with functions only reverting to this template once the geoplex project is complete.

There are many other possible combinations of skill groups which will depend on the geoplex size, aims and the existing organisation. This combination is provided only as a starting point for more detailed work.

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